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Report on the

Consultation to develop a guidance tool for surveillance of health care- associated infection

Cairo, Egypt
18–19 June 2012



World Health
Organization

Regional Office for the Eastern Mediterranean

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CONTENTS

1.	INTRODUCTION	1
1.1	Background.....	1
1.2	Objectives and methods of work	2
2.	SUMMARY OF PROCEEDINGS.....	2
3.	SUMMARY OF RECOMMENDATIONS	4
4.	CONCLUSIONS AND NEXT STEPS	9
	 Annexes	
1.	PROGRAMME	10
2.	LIST OF PARTICIPANTS	11
3.	DOCUMENTS CONSULTED BY THE PARTICIPANTS	13

1. INTRODUCTION

1.1 Background

Infections acquired during health care delivery, more appropriately called health care-associated infections, are a significant public health problem around the world. Health care-associated infections can be acquired anywhere along the continuum of health care settings, including long-term care, home care and ambulatory care. They affect a large number of patients, visitors and health care workers every year and frequently result in amplification of epidemics.

Although estimates of the global burden of health care-associated infections are hampered by the limited availability of reliable data, it is estimated that in developed countries, between 5% and 10% of patients admitted to acute care hospitals acquire one or more infections. In developing countries, on the other hand, the risk of infection is 2–20 times higher and the proportion of patients infected can exceed 25%.

While the average rate for acquiring health care-associated infection may vary by country, the average mortality rate attributable to health care-associated infections among patients affected by them is presumed to be as high as 10%. The burden of health care-associated infections outside the hospital setting (for example, associated with long-term care, home care or ambulatory care) remains virtually unknown.

An international survey on the prevalence of health care-associated infections carried out in 55 hospitals of 14 countries representing four WHO regions in the mid 1980s showed the highest prevalence (11.8%) in hospitals in the Eastern Mediterranean Region, with a prevalence of 7.7%, 9.0%, and 10.0%, respectively, in the European, Western Pacific and South-East Asia regions. In some countries of the Eastern Mediterranean Region (Morocco, Jordan and Tunisia), prevalence studies on the rates of health care-associated infections conducted between 2004 and 2008 have found them to be between 12% and 18%.

Infection control is not a well recognized discipline within the health systems in the countries of the Region and there is significant variation in the development of infection control programmes and initiatives among them. The existing infection control programmes are often unidirectional, focusing only on one or a few interventions. Local studies and local expertise have not been utilized in developing infection control programmes.

Surveillance for health care-associated infections, outbreaks and bacterial resistance, as well as systematic assessment of compliance with infection prevention and control practices, plays an essential part in developing any infection control policy and measuring its success. However, reliable estimates of the burden of these infection rates are hampered by a paucity of data adequately describing endemic infections at national and regional levels, particularly in resource-limited settings. Very few low-income and middle-income countries in the Region have national surveillance systems for health care-associated infections.

1.2 Objectives and methods of work

The prevalence of health care-associated infections is high in several countries in the Region, ranging from 12% to 18%, and implementation of surveillance systems for health care-associated infection requires skills in surveillance methodology, data collection, analysis, and interpretation. Accordingly, Member States at the Fifty-seventh session of the WHO Regional Committee for the Eastern Mediterranean, in resolution EM/RC/57/R.6 (2010), requested the WHO Regional Director for the Eastern Mediterranean to provide technical support to countries for establishment of comprehensive surveillance systems for health care-associated infection in order to detect hospital-acquired infection outbreaks, identify problem areas, help set priorities for infection control activities and measure the progress and success of infection control programmes. The Regional Office is supporting Member States in the Region to implement infection prevention and control programmes in health care at both national and facility level.

With this objective in mind, the WHO Regional Office for the Eastern Mediterranean invited a group of experts to a technical consultation held in Cairo, Egypt from 18–19 June 2012. The meeting provided an opportunity to assess the current needs, availability of existing guidelines for surveillance of health care-associated infections as well as review the types of surveillance system that would best fit the requirements of countries of the Region. Specific objectives of the meeting were to develop a guidance tool on surveillance of health care-associated infections for the countries of the Region and to define a process for finalization and roll-out of the tool.

The meeting participants comprised infection control experts from selected countries in the Region as well as from outside the Region, infection control professionals working with WHO collaborating centres and universities, representatives from the Eastern Mediterranean Regional Network for Infection Control (EMRNIC) as well as epidemiologists and infection control focal points from WHO headquarters and Regional Offices for the Eastern Mediterranean and Europe. The programme and list of participants are presented in Annexes 1 and 2, respectively.

The WHO Temporary Advisers attending the meeting completed the required WHO declaration of interests and no conflicts of interest with the subject matter of this meeting or with WHO were identified.

Before and during the meeting, the participants had access to various documents and published literature related to the issues discussed from WHO and other sources. A list of these documents and published literature is shown in Annex 3.

2. SUMMARY OF PROCEEDINGS

While mapping the endemic situation of health care-associated infection in developing countries, the meeting recognized a paucity of available data on many countries in the Region. A very few high-income and middle-income countries in the Region have established surveillance systems for health care-associated infections. However, many of these countries

are using different definitions for health care-associated infections that are not standardized and many of the methods used for data collection by the countries are not valid, reliable or standardized. Therefore comparison of the infection rates across different countries in the Region is challenging. Furthermore, the majority of these countries are implementing surveillance for health care-associated infections at single hospitals or sometimes in a single ward in a hospital, thereby the findings of such systems cannot be deemed representative of the endemic situation of health care-associated infection in specific countries. Similarly, many of the countries are implementing surveillance for health care-associated infections in teaching hospitals, in which rates of health care-associated infection are usually higher. Thus, the ability to generalize these data to all settings is questionable.

The picture clearly indicated that major difficulties exist for implementation of surveillance for health care-associated infection in developing countries, especially in resource-limited settings. The main reasons can be traced to an absence of expertise and dedicated human and financial resources and to the existence of other important health care priorities. Other constraints include difficulties in application of standardized definition, lack of reliable methods for data collection, analysis and reporting, absence of reliable microbiological and other diagnostic methods, poor-quality information from patients' records and a paucity of electronic records and software or databases for surveillance of health care-associated infection. Furthermore, expertise in interpretation of surveillance data to measure effects of interventions and assess impact is often absent. The meeting underscored the need for standardization of methods of different types of surveillance system as the probability of accurate data collection with high sensitivity and specificity would be highly variable if surveillance is undertaken in different settings without any standardization and without any validation to ensure consistent application of methodologies.

Criteria for definition of health care-associated infection, mostly on the basis of clinical elements, should be identified and their predictive values assessed by comparison with the most frequently used international definitions. As a result of improved surveillance of health care-associated infection in the region and with the objective to raise awareness among policy makers and health care workers, there could be a time to investigate epidemiological models that would allow inclusion of health care-associated infection in the list of major diseases causing morbidity, mortality, and disability, which are regularly reported by WHO and other institutions within global estimates of burden of disease.

The meeting recognized that the important determinants of a high burden of health care-associated infection in developing countries include poor infrastructure, insufficient equipment, understaffing, overcrowding, paucity of knowledge and application of basic infection control measures, prolonged and inappropriate use of invasive devices and antibiotics and scarcity of local and national guidelines and policies.

The occurrence of health care-associated infection in developing countries implies higher mortality rates, prolonged hospital stays, excess costs, increased microorganism resistance to antimicrobials and other adverse consequences.

Overall, health care-associated infection has a great effect on health care facilities, national health care systems, and patients. An improvement in surveillance of health care-associated infection is essential to record the size of this infection burden and the effect of interventions. Moreover, by itself, surveillance can lead to reduction in health care-associated infection. Further research to investigate adaptation and validation of standardized protocols and definitions affordable in developing countries is very much needed.

The meeting recognized that action was required to develop appropriate recommendations and best practices for surveillance of infection prevention and control using a standardized methods and protocol. Setting up the core components for infection control identified by WHO could represent an important starting point to reduce the burden of endemic health care-associated infection. Staff education is a key element, needing fairly limited efforts, and basic principles of infection control should be included in curricula of doctors, nurses, and other health care professionals.

Regional benchmarking data from both developed and developing countries may contribute to further advance the prevention of health care-associated infection, by enabling health care workers and researchers to make accurate and useful comparisons and increase their awareness of this affliction.

3. SUMMARY OF RECOMMENDATIONS

A preliminary literature search was conducted before the consultation to get an idea of what information or evidence is currently available in both published and unpublished studies, reports and other text formats that can guide the development of recommendations for this guideline.

These preliminary literature reviews provided information on some available practices that appeared to be credible and reliable as they were derived from some methodologically acceptable study processes and are of acceptable quality.

The participants discussed the scope and contents of the guidance tool for surveillance of health care-associated infection and agreed on a list of topics that would be included in the guideline.

These topics are presented below.

Objective of the surveillance systems

The objective of the surveillance system would be to contribute to reduction of the incidence of health care-associated infection and its associated morbidity and mortality, among others by generating data on the local and/or regional epidemiology of health care-associated infections for interventions. The other objectives of the system should be to detect outbreaks, identify problem areas, help set priority for infection control activities and meet other standards when available.

Challenges

The organizational challenges of implementation of surveillance system for health care-associated infection would be described in the “preamble” of the document and recommendations would be provided on ways and means to overcome these challenges.

Target group for the guidance document

The effective use of the document, modalities of its use, roles and functions at different level and how it applies to decision-making at various levels of the health systems would be described addressing the following target groups:

- Policy- and decision-makers at national level
- National infection control programme
- Hospital managers at health facility level
- Infection control professionals at the health facility level
- Laboratory staff
- Other related groups including epidemiologists, biostatisticians and data entry staff.

Format of the document

- The title of the document would be either of the three: framework, best practices, or essential issues in surveillance of health care-associated infection.
- Within the preamble of the document, the purpose of the document would be highlighted and the difference between surveillance of health care-associated infection and monitoring of infection control practices would be described.

Implementation strategy

The surveillance system would be established or implemented at health care facility level as sentinel sites.

- The choice, selection and type of health care facilities would be left to the countries to be decided based on national and sentinel site considerations and eligibility criteria of facilities to establish surveillance system for health care-associated infection. However, the process should be progressive in order to include all health care facilities for the surveillance of health care-associated infections.
- Recommendations would be provided to the infection control programme at national level on how to:
 - create organizational structure to support the establishment of a surveillance system for health care-associated infection at health facility level;
 - compile data from multicentre sites as “one national dataset”;
 - use the surveillance data to understand and detect trends of infection and monitor the effectiveness of the infection control programme;
 - report and provide feedback to the health facilities implementing surveillance system;

- develop internal benchmarking for use at national level.
- Responsibility for surveillance system and ownership of data would be delegated to the infection control programme within the Ministry of Health in the countries. However the system can be integrated with the existing public health surveillance system of the country.

Prerequisites for establishing a surveillance system for health care-associated infection

- Description would be provided on conducting comprehensive assessment of infection prevention and control programmes at both national and health facility levels using the WHO tool for assessment.
- Details on how and when to conduct a point-prevalence survey (PPS) would be provided in the annex as the PPS could be a good entry point for establishing the surveillance system for health care-associated infections as data generated from the survey can raise awareness on the presence and extent of nosocomial infections in health facilities.
- Other technical and financial prerequisites would also be described-such as availability of separate budget for conducting surveillance and availability of a dedicated and trained focal point for surveillance of health care-associated infection within the national infection prevention and control programme.

Eligibility/characteristics of sentinel sites for surveillance of health care-associated infection

- The eligibility/characteristics for selection of health facilities as sentinel site for surveillance of health care-associated infection would be elaborated.
- The ideal setting for implementation of surveillance system would be a hospital. However, the following characteristics would be elaborated for consideration by the countries.
 - Availability of a functioning infection prevention and control committee and infection prevention and control team with written tasks and duties
 - Either presence of a microbiology laboratory in the health facility or having access to a microbiological diagnostic service
 - Availability of expertise in surveillance for health care-associated infections
 - Availability of other human and logistics resources needed for establishing effective surveillance system
 - Mostly in acute care settings
 - Presence of intensive care unit in the health facility if device-associated infections are being considered for inclusion in the surveillance system for health care-associated infections and presence of surgical department if surgical site infection is sought;
- Acute health care settings without either a microbiology laboratory or having access to microbiological diagnostic services can be considered for establishing surveillance for health care-associated infections through the use of clinical diagnosis of infection. However, the reliability of such results would remain unvalidated.

Objectives of surveillance of health care-associated infections

- General: to provide information for the interventions to prevent infections.
- Specific:
 - To produce knowledge on the incidence, morbidity and mortality of health care-associated infections and the trends over time
 - To produce knowledge on the risk factors of health care-associated infections
 - To contribute to the early detection of outbreaks
 - To contribute to the assessment of the impact of interventions.

Elements of surveillance

- The health facilities conducting the surveillance for health care-associated infection may choose and prioritize based on national considerations, but in general, high yield is expected with the following types of the health care-associated infection surveillance:
 - Infections having preventive measures based on solid scientific evidence (for example, urinary tract infection and surgical site infection)
 - Device-associated infections for the intensive care unit and high dependency units
 - High burden infections
 - Infections that can cause outbreaks in hospital settings
 - Occupational infections of health care workers.

Methods of surveillance system

- Different approaches would be described with purpose, rationale, advantage and disadvantage of each type of surveillance system:
 - Active surveillance for health care-associated infection
 - Point-prevalence survey
 - Incidence surveillance
 - Targeted surveillance (site, unit and priority-oriented)
 - Prospective design and data collection
 - Collection of patient-based information rather than relying only on laboratory data
 - Data are designed to yield risk-adjusted rates.

Data collection methods (Active versus passive based on methods designed and definitions chosen)

- How to standardize and validate different methods of data collection
- Case definitions: epidemiological criteria for surveillance purpose
 - Simplification of definitions to be used
 - Some examples/guidance on adaptation of case definitions
 - Difference in case finding methodologies for different types of surveillance system
 - How to screen patient records and electronically transfer the data on health care-associated infection to an automated system from the paper-based system.
- Advantages and disadvantages of active versus passive methods of data collection.

Data analysis

- How to include both outcome and process indicators in the analysis.
- Methods to calculate rates and standardize numerator and the denominator data.
- How to interpret the surveillance data to detect change in infection rates, trends, etiological agent as well as outbreaks using a minimum set of indicators and rates.
- Methods to link actions to data analysis.
- How to present datasets for national benchmarking for comparison with other hospitals within the country.
- How to report on protection status of health care workers.

Outbreak management

- How to detect and investigate outbreaks in health care facilities.
- How to determine the source of infection in an outbreak.
- How to communicate result of the investigation to the health care facility and national health authorities.
- How to institute control measures.
- How to establish a mandatory reporting requirement when a health care worker is exposed or infected as a result of nosocomial transmission.

Communication

- Methods to communicate and use surveillance information to improve infection control practice
 - With intercountry practitioners
 - With all other departments of preventive and clinical medicine within the health-facility
 - With national health authorities
 - With other sectors, as needed.

Evaluation of the surveillance system

- General description on the process and outcome evaluation using a minimum but acceptable set of rates.
- What are the golden rules for evaluation.
- How to set up a national and regional benchmarking for inter-hospital and intra-country comparisons.
- Methodologies for risk adjustments (for example, by patient ward, by disease severity and by infant weight) to set internal benchmarking.

Links to other surveillance systems

- How to link the surveillance for health care-associated infection with other existing public health surveillance systems and the importance of integration.
- How to forge a stronger links with surveillance systems for antimicrobial resistance.

The target audience of this proposed guideline was identified to be the ministries of health in the Member States of the Region, including the private sector.

4. CONCLUSIONS AND NEXT STEPS

The meeting was the first step towards developing a guidance tool for surveillance of health care-associated infections.

A tool development group will be established by the Regional Office to guide the development of the document.

Upon finalization of the meeting report and scope of the guidance tool, the Regional Office will commission a group of experts with the task of developing the document on surveillance for health care-associated infection using a systematic process.

An external review group will also be constituted for peer review of the developed document before it is submitted to the Publications Committee of the Regional Office for final approval.

By early 2013, another technical consultative meeting will be convened to review the guidance tool before it is submitted for final approval.

Annex 1**PROGRAMME****Monday, 18 June 2012**

08:30–09:00	Registration	
09:00–09:30	Opening session	
	Opening remarks	
	Message from the Regional Director	
	Presentation of the objectives and agenda	
	Introduction of participants	
09:30–10:15	Surveillance of HAI. Why do we need it, and what is needed now?	<i>Dr Hassan El-Bushra, WHO/EMRO</i>
10:30–11:15	Surveillance of HAI: the WHO perspective	<i>Dr Sergey Eremin, WHO/HQ</i>
11:15–11:30	General discussion	
11:30–12:00	Sharing experience of HAI surveillance: Challenges and lessons learnt	<i>Dr Maha Talaat, NAMRU-3</i>
	HAI surveillance in Egypt	
12:00–12:30	HAI surveillance in Oman	<i>Dr Bassim Zayed, Oman</i>
12:30–13:00	Surveillance benchmarking and HAI surveillance in Saudi Arabia	<i>Dr Aiman El-Saed Ramadan, Saudi Arabia</i>
14:00–14:45	HAI surveillance: lessons from the field	<i>Dr Eisa, Hassan Abd elAziz Mahmoud, Sudan</i>
	Sudan	
	Chile	<i>Dr Fernando Otaiza</i>
	Kyrgystan	<i>Dr Gulmira Djumalieva</i>
14:45–16:00	Identified gaps and controversies, resource implications: general discussion	<i>All participants</i>
16:00	End of Day 1	

Tuesday, 19 June 2012

09:00–09:30	Developing the document: basic principles versus best practices versus manual versus protocols versus all the above	<i>All participants</i>
09:30–13:00	General discussion of the scope	
14:00–15:00	Defining the needs for evaluating the evidence. Questions to address: general discussion	
15:00–15:30	Determining the needs for systematic review(s): general discussion	
15:30–16:00	Draft workplan and next steps	<i>Mamunur Malik, WHO/EMRO</i>

Annex 2

LIST OF PARTICIPANTS

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Annex 3

DOCUMENTS CONSULTED BY THE PARTICIPANTS

WHO documents

Core components for infection prevention and control programmes. Geneva, World Health Organization, 2009 (WHO/HSE/EPR/2009.1) http://www.who.int/csr/resources/publications/WHO_HSE_EPR_2009_1/en/index.html accessed 4 June 2012

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